Amendments to the Claims:

Please cancel claims 1 to 24 as presented in the underlying International Application No. PCT/EP2004/001564 without prejudice.

Please add <u>new</u> claims 25 to 48 as indicated in the listing of claims below.

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1 to 24 (canceled).

Claim 25 (new):   A method for automatically controlling a production process for the series production of order-specific products, the production process including a partial process, a sequence of orders in electronic form for the products produced in the production process, and a sequence of production objects running through the production process, the products being created by the production objects, a selection process selecting an order of the order sequence and a production object of the production object sequence that match one another, the selected production object being processed according to the selected order in the partial process, the selection process and processing being repeated until each order of the order sequence has run through the partial process, the method comprising:

generating a copy of the order sequence;

creating an initially empty electronic buffer memory for orders;

in a selection process, whenever a first production object of the production object sequence and a first order of the copy do not match one another, removing the first order from the copy and storing the first order in the buffer memory; and

in a further selection process, whenever a waiting time of at least one order in the buffer memory up to the selection process is greater than or equal to a prescribed waiting time limit, selecting the order with a greatest waiting time in the buffer memory and a matching production object from the production object sequence, removing the selected order from the buffer memory, and bringing forward the selected production object to a

first place of the production object sequence.

Claim 26 (new): The method as recited in claim 25 further comprising prescribing a minimal time interval between two consecutive selection processes, prescribing a numerical limit for the maximum number of orders in the buffer memory, and prescribing a value less than or equal to the product of the minimal time interval and the numerical limit as the prescribed waiting time limit.

Claim 27 (new): The method as recited in claim 25 further comprising prescribing:

a maximum run-through time through the partial process to be guaranteed for all production objects of the production object sequence,

a maximum processing time, applicable to all production objects of the production object sequence, as a time interval between when the production object is selected and when the production object leaves the partial process,

a maximum time interval between two successive selection processes, and

the prescribed waiting time limit such that the sum of the prescribed waiting time limit, the prescribed maximum time interval, and the prescribed maximum processing time is less than or equal to the prescribed maximum run-through time.

Claim 28 (new): The method as recited in claim 25 wherein whenever the waiting time of an order in the buffer memory has reached or exceeded the waiting time limit, for each order in the buffer memory, on a trial basis:

a matching production object is determined,

a work order for the partial process is generated for the processing of the matching production object for the order, and

how long the implementation of this work order will last is determined; and

the order in the buffer memory for which a sum of the waiting time in the buffer memory and the determined implementation time on the trial basis takes the greatest value is selected.

Claim 29 (new): The method as recited in claim 25 wherein whenever no production object

in the production object sequence matches the order with the greatest waiting time and the greatest waiting time is greater than the waiting time limit, the unmatched order is removed from the buffer memory and marked.

Claim 30 (new):   The method as recited in claim 25 wherein, whenever the buffer memory contains at least one order matching the first production object of the production sequence, and no order in the buffer memory has a waiting time greater than the waiting time limit, the first production object and the matching order are selected.

Claim 31 (new):   The method as recited in claim 25 wherein a natural number N is prescribed as a batch size for processing of production objects in the partial process, N orders processable as a batch in the partial process are selected from the copy of the order sequence and/or the buffer memory, and N production objects of the production object sequence that match the N orders are selected, brought forward to the first N places of the production object sequence and processed according to the N orders in the partial process.

Claim 32 (new):   The method as recited in claim 31 wherein a set of N orders and N production objects matching the set of N orders is repeatedly selected on a trial basis, each of the selected sets is assessed with an assessment function based on at least one of the following individual criteria:

a number of production objects of the production object sequence that are before a production object of the set selected on a trial basis and themselves do not belong to the set,

a number of orders of the copy of the order sequence that are before an order of the set selected on a trial basis and themselves do not belong to the set,

the maximum waiting time in the buffer memory of those of the N orders selected on a trial basis,

costs for the processing of the N production objects in the partial process according to the N orders, and

a time requirement for the processing of the N production objects in the partial process according to the N orders; and

further comprising selecting the set assessed with the assessment function as a best set.

Claim 33 (new): The method as recited claim 31 wherein the first N production objects of the production object sequence and N orders matching the first N production objects are selected.

Claim 34 (new): The method as recited in claim 25 wherein the selected order is inserted into the copy at the first place, and a maximum promotion or a maximum demotion of the production objects of the production object sequence is determined, the order sequence being compared with the copy of the order sequence.

Claim 35 (new): The method as claimed in claim 25 further comprising determining a quotient of:

a number of the orders in the copy of the order sequence stored in the buffer memory; and

a number of the orders in the order sequence before a first selection process.

Claim 36 (new): The method as recited in claim 25 wherein after the partial process, the production objects run through a further partial process, the selected order is inserted into the copy at the first place, a second, initially empty, electronic buffer memory for orders is created, a second selection process, in which an order of the copy and a production object of the production object sequence that match one another are selected, is carried out for the further partial process, and whenever a first production object of the production object sequence and a first order of the copy do not match one another, the first order is removed from the copy and stored in the second buffer memory, and in a second further selection process, whenever a waiting time of at least one order in the second buffer memory up to the second selection process is greater than or equal to a prescribed further waiting time limit, the order with the greatest waiting time in the second buffer memory and a production object matching the order with the greatest waiting time from the production object sequence are selected, the selected order is removed from the second buffer memory, and the selected production object is brought forward to the first place of the production object sequence, the selected production object is processed according to the selected order in the further partial process, and the second selection process and

processing are repeated until every order of the order sequence has run through the further partial process.

Claim 37 (new):   The method as claimed in claim 25 wherein the production process comprises a further partial process run through the production objects after the partial process,

a second selection process, in which an order of the order sequence and a production object of the production object sequence that match one another are selected, is carried out for the further partial process,

the selected production object is processed according to the selected order in the further partial process; and

the second selection process and processing are repeated until every order of the order sequence has run through the further partial process.

Claim 38 (new):   The method as recited in claim 25 wherein positions of the orders in the order sequence are compared with the sequence in which the orders are selected, and further comprising:

determining, for each order, a relative position in the selection sequence in comparison with a respective position in the order sequence; and

calculating a sequence quality of the production process from the relative positions of all the orders.

Claim 39 (new):   The method as recited in claim 38 wherein the calculation of the sequence quality includes determining a greatest value of all the relative positions, a smallest value of all the relative positions, or a mean value of all the relative positions.

Claim 40 (new):   The method as recited in claim 25 wherein each order has product features of the product to be produced order-specifically, each production object having production object features which have been manufactured in a previous partial process of the production process, and, in the check whether a production object and an order match one another, the production object features are compared with a subset of the product features.

Claim 41 (new):   The method as recited in claim 40 wherein a production object and an order are assessed as matching one another whenever every product feature of the order that belongs to the selection subset is consistent with all the production object features.

Claim 42 (new):   The method as recited claim 25 wherein for each order of the order sequence, a data record is created in an electronic database, the data record including:

a first data field for an order position of the order in the order sequence; and

a second data field for a copy position of the order in the copy,

the copy being formed by the second data field of each data record being filled with a respective value of a first data record;

and, when the order is selected, the copy position of the order in the copy is entered in the second data field.

Claim 43 (new):   The method as recited in claim 42 wherein each data record includes an initially empty third data field for the electronic buffer memory, an order is stored in the buffer memory by the third data field of the data record for the order being filled with an identification of the buffer memory, and an order being removed from the buffer memory by the third data field being emptied.

Claim 44 (new):   The method as recited in claim 25 wherein the production process includes a sorting buffer, and, when the selected production object is brought forward to the first place of the production object sequence, all the production objects of the production object sequence before the selected production object are stored in the sorting buffer.

Claim 45 (new):   The method as recited in claim 44 wherein the sorting buffer includes a designated maximum number of available places for production objects, and, whenever free places are not available in the sorting buffer for every production object that is arranged in the production object sequence before the selected production object, a selection of the order and of the production object is reversed and the order is removed from the buffer memory and marked.

Claim 46 (new):   An apparatus for automatically controlling a production process as recited in claim 25, the apparatus comprising:

      a device for selecting an order of the order sequence and a production object of the production object sequence that match one another;

      an electronic buffer memory for the orders;

      a device for generating a copy of the order sequence; and

      a device for selecting an order with the greatest waiting time in the electronic buffer memory.

Claim 47 (new):   A computer program product loaded directly into an internal memory of a computer and comprising software sections performing the method as recited in claim 25 when the computer program product runs on the computer.

Claim 48 (new):   A computer program product stored on a computer-readable medium and having computer-readable programming causing a computer to perform the method as recited in claim 25.